

## Inventory of Technical Architecture Information for RMS-W Deployment

1. **Purpose:** An important part of preparing for RMS-W deployment is to inventory the specific technical architecture (e.g., hardware, software, communications, configuration, etc.) required and available for the deployment. The purpose of this inventory form is to assist you in collecting this information for use in planning and executing the deployment.
2. **General Guidance:** RMS-W uses a *client-server* structure. There are several possible configurations (see Figure 1).

**A. Thick Client-Local Server Configuration:** A typical configuration consists of a RMS *database* (using *ORACLE* database software), with the “RMS database of record” located on the CEAP Center plus a working RMS database located on a local *database server*, and the RMS *application* installed on a *client* computer. When the RMS application performs an operation such as updating the contract schedule or calculating the appropriate progress payment, the RMS application pulls the current data from the local RMS *database* into the *application*, performs the calculation, and then uploads the revised data back to the RMS *data base*. Periodically (e.g., nightly) the local database is synchronized (a.k.a., “replicated”) with the RMS district database located on the CEAP server. (*Note: it is possible to put the RMS database and the RMS application on a single server computer; however, because of operational and technical considerations, the database and the application should normally run on separate computers.*)

**B. Thin Client Central Server Configuration:** Another option being investigated is the so called “thin client” configuration. When a “thin client” approach is used, there are additional hardware and software requirements, but the installation and maintenance on the user’s client machine are greatly simplified. The “thin client” approach being investigated for RMS use consists of one server for the RMS *database* and another server to run the RMS *application* plus two other applications, *Windows NT Terminal Server* and *MetaFrame*. The thin *client* (i.e., user) *computer* is connected to the *application server computer* by a high speed communication link.

The interaction between the database server and the application server takes place in one central location, and the thin client (user) simply views the screen image of the RMS transaction taking place. This reduces the need to have RMS data move between the user’s location and the central RMS database location, and thus reduces the demand on the communication line linking the RMS user with the RMS *database* and *application*. This configuration has been initially tested for RMS, and more extensive testing is underway to determine the full feasibility of using this configuration. This testing will include two alternatives: 1) locating the MetaFrame/Terminal Server at the CEAP Center, and 2) locating the MetaFrame/Terminal Server at the district headquarters.

3. Responsiveness for RMS Users: the apparent “speed/responsiveness” of the computer program to the RMS end user is a function of many factors, including: the processing speed/capability of the RMS *data base server*; the processing speed/capability of the RMS *client machine*; the capability of the *communication link*, including various components such as routers, switches, etc; the efficiency inherent in the *design of both the database and the application*; the *number and size of simultaneous transactions* being handled concurrently by the server computer, the client computer and/or the communications link; etc.

End user satisfaction with the speed/responsiveness of any computer program is critical to its overall success. It is also important that the configuration of any client-server based system be manageable, to include installation, upgrades, reliability of services, access control, security and both initial and long-term costs. Hence, it is important that the RMS technical architecture provide *responsive user support* while remaining *manageable*. A sketch of the common alternative configurations, based on experience to date, is at Figure 1.

4. Computer Hardware: From the above discussion, for a “thick client” local server configuration, you can conclude that you will need a computer (a.k.a. *server*) for the RMS database, and a second computer (a.k.a. *client*) for the RMS application. The minimum requirements for the client and server computers depend to an important degree on the *number of concurrent users* (Few? Many?), the *level of use* (Minimal? Maximum?), and the *amount of data* (Few contracts? Many contracts?) to be maintained in the RMS database. For the thin client configuration, an additional MetaFrame/Windows NT Terminal Server is required. Additional guidance is at Table 1 of this document.
5. Communications Link: The speed (and thus the capacity) of the communication link along with the other data flowing over the communication link(s) between the RMS *database server* and the RMS *application client computer* can significantly influence the RMS responsiveness experienced by users. In turn, the speed and capacity of the communication link influence the configuration (i.e., location) of the RMS database server. Communications links can vary among for example a 28.8 KB or 56 KB dial up modem connection, an integrated services digital network (ISDN) line, a digital subscriber line (DSL), a cable modem, or a T-1 line. To sense the differences in the capacity (and therefore the speed) of these different computer connections, a 10-megabyte file would typically take *25 minutes* to be transferred over a 56 KB line, while the same 10-megabyte file would only take *51 seconds* to be transferred over a T-1 line (this assumes no other “traffic” is competing for bandwidth on the communications link).
6. Software: Various software programs are required to deploy RMS-W. The RMS database requires *ORACLE software* that is installed on the RMS database server computer. (See *Oracle Ordering Instructions* for details). The database server also requires *operating system* software and *Windows NT* is recommended. The RMS *application software* is developed by the RMS Center and is downloaded from a government website onto the application server computer. The client PCs require operating system software, and this may be Windows 95, Windows 98, or Windows NT (4.0 or newer). If a special information technical architecture configuration called *thin client* is used, some additional software is needed. *This thin client configuration* requires *Windows NT Terminal Server* (on database server) with a user license for each client that does not use NT; and MetaFrame on the application server.

7. Server Location: As discussed above, the responsiveness of the RMS application depends upon several different factors which vary within individual districts and among districts, throughout the entire USACE command. Accordingly, currently there is not a single approach to locating the RMS server. The needs, conditions and capabilities of each RMS location must be identified and considered. There are three basic choices for location of the RMS server:

- a. At the CEAP processing center (Western Processing Center in Portland or Central Processing Center in Vicksburg).
- b. At the district headquarters.
- c. At the area or resident office in the field.

Because of the lack of high-speed end-to-end communications between the CEAP processing centers and individual field offices along with the design of the RMS application, placing the database server at the CEAP center will not currently provide responsive end user support. However, we are hopeful that the special *thin client* (MetaFrame) configuration in the near future may allow effective placement of the RMS database server and RMS application on the CEAP platform. An additional alternative being evaluated is using this thin client configuration on a dual processor client-server computer located at the district headquarters. Either the CEAP or the district server configuration is likely to be more easily maintained than the area/resident office server configuration. However, it is anticipated that the area/resident office server configuration is the most likely to provide maximum responsiveness to RMS end users.

**District Configuration Worksheet:** Please use the worksheet below to help you plan for RMS-W deployment within your district.

*Note: fill out a separate sheet for each server installation, and number them (e.g., 1 of 3)*

a. **District Name:** \_\_\_\_\_ b. **Date Worksheet Prepared:** \_\_\_\_\_

c. **Person Completing Worksheet (name/office/phone):** \_\_\_\_\_

d. **Server Location:** \_\_\_\_\_

e. **Sites/Users Supported by this Server:**

Office (area/resident/project)

# Users

Communication Line Type


f. **Performance Data on RMS Database Server Computer:**

1) Processor Speed: \_\_\_\_\_ MHz and Number of Processors: \_\_\_\_\_

2) Available Main Memory: \_\_\_\_\_ MB

3) Available Storage on Hard Drive: \_\_\_\_\_ GB

4) Operating System: \_\_\_\_\_

5) Internet Protocol (IP) Address: \_\_\_\_\_

6) Type of Communications Line Between Server and Users: \_\_\_\_\_

7) Overall Number of Users Supported by this Server: \_\_\_\_\_

8) POC Name & Ph # for Server Maintenance Issues: \_\_\_\_\_

9) Is Oracle installed on this server? \_\_\_\_\_ If so, what version? \_\_\_\_\_

10) If the MetaFrame/Terminal Server configuration is to be used, fill out the following additional information:

Number of concurrent users: \_\_\_\_\_;

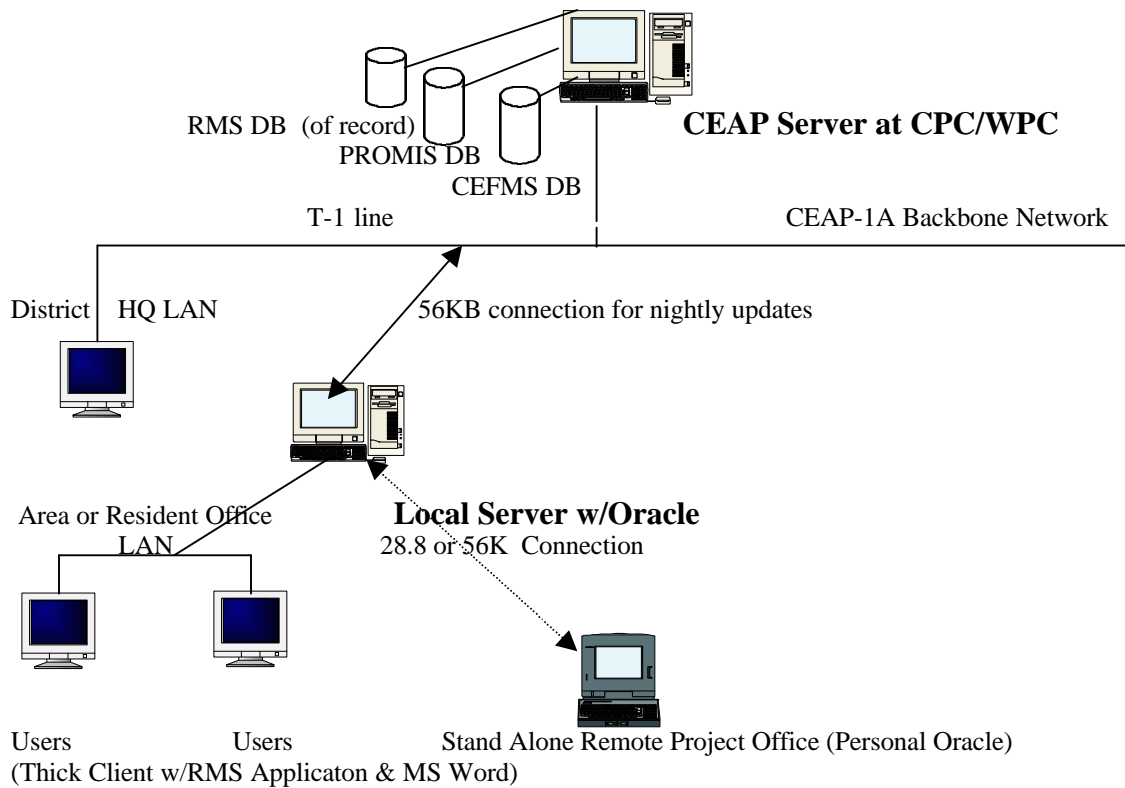
Is *Microsoft NT Terminal Server* software installed on the server already? \_\_\_\_\_ If so, what version? \_\_\_\_\_ If not, when will it be available? \_\_\_\_\_;

Is the *Citrix MetaFrame* software installed on this server? \_\_\_\_\_ If so, what version?

\_\_\_\_\_ If not, when will it be available? \_\_\_\_\_

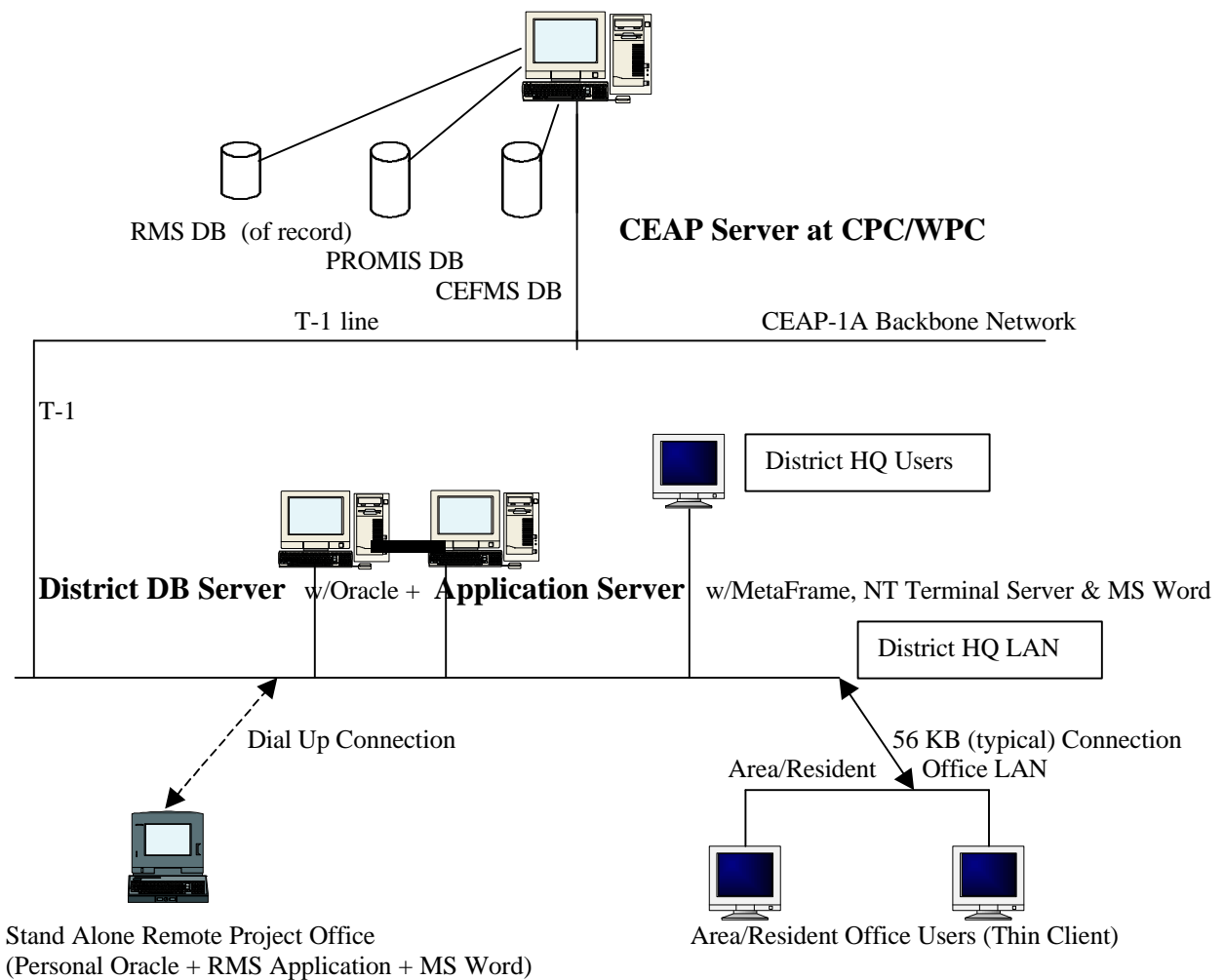
*Figure 1-a*  
**POTENTIAL RMS-W CONFIGURATIONS**  
*Centralized CEAP Database Plus Local Servers and Thick Clients*

### 1. Configuration A



*Figure 1-b*  
**POTENTIAL RMS-W CONFIGURATIONS**  
*Centralized Database W/MetaFrame Application Server at District & Thin Clients*

### Configuration B



*Figure 1-c*  
**POTENTIAL RMS-W CONFIGURATIONS**  
*Centralized Database W/MetaFrame Application Server at CEAP & Thin Client*

